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Introduction

"*Whose Home Is the Range, Anyway?*: The latest research is confirming that in the West's fragile public lands, cattle are often bad news for wildlife." This is the title and headline of Lisa Drew's article in the December/January 1994 issue of National Wildlife. It shows a picture of what looks like a wasteland with only cattle, manure and a fence, no vegetation (Drew, 1994). Inside the article, Drew quotes biologist Bob Ohmart at Arizona State University's Center for Environmental Studies as saying, "Livestock grazing is without a doubt the greatest threat to western wildlife" (p. 15). Drew contends that, "The more researchers learn, the more of a villain seems the cow, which eats 12,000 pounds of plants a year and lingers in riparian areas" (p. 16).

Livestock grazing on the public rangelands has come under much criticism in both the past and the present. In a 1977 report to the Congress by the Comptroller General of the United States, the first sentence was, "The Nation's public rangelands have been deteriorating for years and, for the most part, are not improving" (p. i). Many environmentalists agree with this statement today. In *Ending the Range Wars?*, William Riebsame writes: "Environmentalists claim that much of the federal rangeland is overgrazed and that low grazing fees and lax agency oversight give ranchers defacto control of the land and make them careless of the resource" (p. 6).

On the other end of the spectrum is the statement by Thadis Box, "I believe the range, on a whole, is in the best condition it has been in this century" (Box, 1988, p. 1). Box is a Certified Range Management Consultant, past president of the Society for Range Management, professor and Dean Emeritus of Natural Resources at Utah State University. Box made the same statement in 1979 in a paper presented for the Rangelands Policy Symposium in Tucson, Arizona (Box, 1979).

The purpose of this paper is to examine some of the available data concerning range condition on BLM administered lands, and to determine the trend for those lands.

History of Livestock on Public Lands

During the mid 1800's to the early 1900's, Congress tried to encourage the settlement of the West through a series of grant programs. One portion of the programs were the Homestead and Stockraising Acts of 1862, 1909, and 1916 (United States Department of the Interior Bureau of Land Management [USDI BLM], 1984a). The original Homestead Act of 1862 allowed for the unrestricted settlement of 160 acres of public land by all settlers (USDI BLM, 1962, pp. 29-30). One of the problems with this first Homestead Act was that, in many areas, the amount of land that a settler could claim was inadequate to support a family, so the Federal government passed the Enlarged Homestead Act of 1909 (USDI BLM, 1984b). This Act increased the homesteading acreage to 320 acres, of which, 80 acres had to be cultivated, in areas of the West that could only be dry-land farmed because irrigation was impossible. Finally in 1916, Congress passed the Stockraising Homestead Act in order to increase the acreage to 640 acres when the land was only suitable for livestock grazing. The 640 acres was believed to be adequate to support 50 cows year-long. The Stockraising Homestead Act was repealed in 1934 with the passage of the Taylor Grazing Act (USDI BLM, 1962, Stoddart & Smith, 1955).

Approximately 285 million acres of public land were claimed under the Homestead and Stockraising Acts; however, the Federal Government bought back over 2.2 million acres of that land because the farmers went bankrupt. The public lands were better suited for livestock production than farming. The Western livestock industry grew rapidly due to the quality of the forage and large open spaces (USDI BLM, 1984a).

The journals of early explorers contain numerous accounts of "seas of grass belly deep to a horse" (Box, Dwyer, & Wagner, 1976, p. 12). In the early 1800's, the Spanish had established their livestock industry on the west coast from San Diego north. Feed was not grown for the livestock; therefore, the livestock was allowed to scatter and roam the "Pacific Slope" where range was unlimited and forage was plentiful. The West coast

population began to grow as a result of the gold rush and livestock herds increased with the population. Stockmen began moving their herds eastward into Nevada and Arizona. As the Western livestockmen moved east, the eastern livestockmen were moving west into Missouri, Kansas, Minnesota, the Dakotas, Montana, Oklahoma, and Colorado (Barnes, 1913).

In the late 1870's, large cattle companies were formed in the eastern U.S. and Europe. These companies sent promoters to Texas to purchase longhorn cattle to move north onto the vacant ranges. Herds of cattle were trailed from Texas to Kansas. Cattle made their way slowly, gaining flesh the entire drive. These animals seldom moved more than eight to ten miles a day, arriving at the railroad almost ready to slaughter (Barnes, 1913).

"In 1870, there were approximately 4.6 million cattle in the 17 Western States. Less than 20 years later, there were 26.65 million" (USDI BLM, 1984a, pp. 1-2). The ranges became overstocked and a few ranchers became alarmed (Barnes, 1913, USDI BLM, 1984a). In some states, livestock operators wanted to create some form of control over the ranges by banding into grazing associations. These associations were not very successful in restricting new settlers or preventing itinerant sheepherders from encroaching on the lands that they had allocated among themselves (USDI BLM, 1984a)

The years 1886 and 1887 had severe winters. These winters destroyed hundreds of thousands of animals spread out over the depleted range. These two winters were followed by a prolonged drought that further crippled the livestock industry (USDI BLM, 1984a). The southwest had a similar occurrence in 1893, and most of the cattle died (Barnes, 1913). In 1895, Jared Smith wrote:

> There has been much written in the last 10 years about the deterioration of the ranges. Cattlemen say that grasses are not what they used to be; that the valuable perennial species are disappearing, that their place is being taken by the less nutritious annuals. This is true to a marked

degree in many sections of the country" (Smith, 1895 as cited by Box, et al., 1976 p. 12).

The public rangelands and the livestock industry continued to experience cyclical overstocking, natural disasters, and shifting market conditions For example, W.W.I increased the demand for meat, thereby causing a boom in the industry. The bust came after the war when the amount of meat needed was much less, and the rangelands had been overgrazed. It was reported that during the Great Depression, the public lands were, "producing at half their original capacity..." and that they, "could no longer sustain the livestock numbers being grazed" (USDI BLM, 1984a, pp. 2-3). In 1934 range wars arose between cattlemen and sheepmen over who had the right to use what range (USDI BLM, 1984b). This added to the problem of overgrazing. The proverbial "Tragedy of the Commons" had occurred.

The Taylor Grazing Act was passed in 1934. It was one of the most comprehensive conservation programs for the U.S.'s public lands. The purpose of the Act was, "to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; [and] to stabilize the livestock industry dependent upon the public range..." (USDI BLM, 1984a, p 3). The Taylor Grazing Act ended free access to public range, authorized the classification of land based on its best use, and ended the large-scale public land disposal by withdrawing all remaining public lands from sale prior to classification (USDI BLM, 1984a, USDI BLM, 1962).

The end of free access to public rangelands was accomplished by forming grazing districts. These districts would be administered by the newly formed Division of Grazing within the Department of the Interior. The grazing leases on public rangeland located outside of the grazing districts would be administered by the General Land Office (USDI BLM, 1962). In 1946, the Division of Grazing (Grazing Service) and the General Land Office were combined into one agency, the Bureau of Land Management, under the

Department of the Interior. Both agencies' function, responsibilities and personnel were combined and made the responsibility of the BLM (USDI BLM, 1962).

The BLM of today is a multiple use agency. As of 1993, the BLM managed 267,640,286 acres of public land of which, 134,966,041 acres were within grazing districts. In the 16 western states, the rangelands provide habitat for fish and wildlife, act as watershed, provide recreational opportunities, and serve as sources of minerals (USDI BLM, 1990).

Range Condition and Trend

In 1989, the Society for Range Management (SRM) established the Task Group on Unity in Concepts and Terminology. One of the Task Group's goals was to publish an updated list of glossary terms pertinent to range classification, inventory, and monitoring (Task Group on Unity in Concepts and Terminology [Task Group], 1995). They noted that range condition had historically been defined in one of two ways: "(a) a generic term relating to present status of a unit of range in terms of specific values or potential. Specific values or potentials must be stated. (b) the present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amount of plants in a plant community resemble that of the climax plant community for the site" (Task Group, 1995, p. 280). The BLM's definition of range condition is similar to the second definition above: "the degree of similarity of present vegetation to the potential or climax plant community" (USDI BLM, 1990, p. 2).

The traditional BLM range condition classification system consisted of: "excellent", "good", "fair", and "poor". These classifications were meant to compare a site's existing vegetation with that site's natural potential, not to determine whether current management is successful. A rating of "fair" or "poor" does not necessarily mean that the management practices need to be changed. "Often multiple uses (e.g., wildlife habitat,

camping, hiking, livestock grazing) are best provided when a site's vegetation is very different from its natural potential composition" (Mosley, Smith, & Ogden, 1990, pp. 12-13).

Due to the misinterpretation of the range condition classifications by the public, the BLM decided to change the way they report ecological condition. The BLM has started to replace the terms "excellent", "good", "fair", and "poor" with the terms "potential natural community (PNC)", "late-seral", "mid-seral", and "early-seral". The change in terms is to attempt to describe a site's existing vegetation without injecting the subjective bias that qualitative terms such as "good" or "poor" do (Mosley et al., 1990).

The most important concept to this paper is trend. Trend is, "the direction of change in an attribute as observed over time" (Task Group, 1995, p. 280). For example, if a riparian area that had cut banks with no grass cover in 1936 and in 1996 that same riparian area had the banks sodded over with riparian grasses, sedges, and willows, that would show improvement for that site. That improvement over time shows an upward trend. The purpose of this paper is to determine the trend of the BLM administered rangelands by comparing past range condition assessments.

Past Assessments of Range Condition and Trend

The first attempt at a nationwide assessment of range condition was a U.S. Senate report entitled *The Western Range* (1936). In this report, range condition was expressed in degrees of depletion from virgin, or climax, plant communities. There were four degrees of depletion used for classification: moderate (0-25%), material (26-50%), severe (51-75%), and extreme (76-100%) (USDI BLM, 1984). *The Western Range* listed 1.5 % of the public rangelands as moderately depleted, 14.3 % materially depleted, 47.9% severely depleted, and 36.3% extremely depleted (USDI BLM, 1984a, USDI BLM, 1984c).

In 1966 the Public Land Law Review Commission hired Pacific Consultants as a private contractor to conduct a national inventory of range condition. Their report, *The Forage Resource* (1969). It concentrated primarily on Federal rangelands. The ratings used referred to the present state of the range sites in relation to their potential or climax vegetation (USDI BLM, 1984). *The Forage Resource* indicated that for BLM administered lands, 2.2% were in excellent condition, 16.7% in good condition, 52% in fair condition, and 29% in poor condition (USDI BLM, 1984a, USDI BLM, 1984c, USDI BLM, 1990).

The next report was prepared by the United States Department of Interior for the Senate Appropriations Committee in 1975. This report, entitled *Range Condition Report*, was based on available data and estimates from field observations. Its purpose was to identify the current range condition and the expected trend. Current management efforts were also identified. *Range Condition Report* published the following figure in its assessment of BLM managed rangelands: 2% in excellent condition, 15% in good condition, 50% in fair condition, and 28% in poor condition. and 5% in bad condition (USDI BLM, 1975). The USDI BLM Summer 1984 publication *Your Public Lands: Fifty Years of Rangeland Management* noted that the 1975 report of range conditions was, "based on forage production for livestock only without regard to needs for other purposes or the production potential of each site" (p. 10).

The *Range Condition Report* of 1975 was the last comprehensive report of range condition until 1984 (Public Land Statistics (PLS) 1985). In 1984 the BLM began publishing range conditions yearly in the *Public Land Statistics* (See Table I for all range condition assessments). The condition classes from 1984 to 1986 were, "expressed in degrees of depletion from the virgin, or climax, plant community," where excellent was 0%-25% depletion (moderate), good was 26% to 50% depletion (material), fair was 51% to 75% depletion (severe), and poor was 76% to 100% depletion (extreme) (PLS 1984, p. 81). By 1987, the procedure for assessing range condition had changed again. Range

condition from 1987 to1993 was, "expressed in degree of similarity of present vegetation to the potential natural, or climax, plant community," where excellent was 76% to 100% similarity, good was 51% to 75% similarity, fair was 26% to 50%similarity, and poor was 0 to 25% similarity (PLS 1988, p. 28).

A factor to consider in evaluating the percentages of rangeland by condition class are the data from 1984 to 1992 that were based on actual site inventories that varied from 49% to 60%. The remaining information was based on earlier inventories and professional judgment (PLS 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992). The information in the 1993 figures was based only on ecological site inventories (PLS 1994).

Figures other than BLM's were produced by the General Accounting Office (GAO). In June of 1988, the GAO published the findings of a survey consisting of approximately 800 questionnaire responses of Bureau of Land Management and Forest Service range managers. The information was published in the GAO report *Rangeland Management: More Emphasis needed on Declining and Overstocked Grazing Allotments*. The GAO, "verified and supplemented the information provided by the range managers by visiting 20 BLM and USFS field offices." (US GAO, 1988)

The results of their survey showed that in 1986, 4% of BLM range was in excellent condition, 30% in good condition, 41% in fair condition, 18% in poor, and 7% unknown. Trend was also evaluated in this report. The GAO concluded that 15%was improving, 64% was stable, 14% declining, and 7% unknown (US GAO, 1988).

This GAO report was challenged by Resource Concepts, Inc.'s January 1992 Report to Congress. Resource Concepts, Inc. addressed the GAO's use and interpretation of questionnaires to attain the information contained in *Rangeland Management: More Emphasis needed on Declining and Overstocked Grazing Allotments*. One concern was that more than 25% of the questions on the survey began with the phrase "In your opinion..." Resource Concepts, Inc. concluded that, "All of the data generated from the questionnaire regarding the status of range condition and trend were based upon the

opinion of the respondent;" therefore, the report lacked the objective data to support their conclusion (1992, p. 3).

The GAO reports are not the only figures that may be misrepresentative. Thadis Box notes that neither the GAO report or the reports done in 1936, 1966, 1972, and 1986 have very good scientific credibility (Box, 1988). The methods used to determine condition classes differ between the reports; therefore, they are not directly comparable (USDI BLM, 1984a). Also, the figures produced by the BLM and published in the annual Public Land Statistics were not based entirely on ecological site inventories. In 1989 and 1991, as much as 51% of the figures were based on earlier inventories and professional judgment (PLS 1990, 1992).

Box et al. (1976) noted that even though different techniques were used to measure range condition at different times, they could not dispute the marked improvement in range condition between the 1936 and 1966 reports. The studies conducted in 1936 and 1984 to 1986 were expressed in degrees of depletion. The reports may not be exactly comparable, but they show that the amount of BLM rangeland that is in fair to poor condition has decreased, and the amount of excellent to good condition range has increased since 1936. This is evidence that the trend has improved.

The trend for 1987 to 1993 was also improving even though the 1993 figures were based entirely on ecological site inventories and only 50% of the 1987 figures are based on ecological site inventories (see Figure 1 which shows range condition trend based on the figures of all of the studies). In Box's 1988 Statement on Condition of American Rangelands, he wrote that, "Any one, or all, may be off by several percentage points, but the trend is toward better range" (p. 2).

Another factor that the BLM relies on to show, "further proof of the improving trend in the condition of the public range is the dramatic increase in big game populations since 1960, in the presence of livestock and in spite of human encroachment and significant habitat loss" (USDI BLM, 1990, p. 7). The figures that BLM used to

substantiate their claim were acquired from the Public Land Statistics of 1960 and 1988 (USDI BLM, 1990), and are presented in Table II.

The condition of the West's rangelands has been the subject of heated debate since the turn of the century. The purpose of this paper was to look at the past assessments of BLM rangeland condition, and determine what the trend is for those lands. By looking at the figures produced for each assessment on range condition, the trend shows an improvement in range condition. The figures show that the amount of BLM rangeland that is in fair to poor condition has decreased, and the amount of excellent to good condition range has increased since 1936. The reports may not be exactly comparable, but they indicate an upward trend in range condition.

Appendix

Table I. Range condition has been assessed many times during the last 61 years. Some of these assessments have been done by different agencies and organizations, using different methods; therefore, the figures are not directly comparable. Still, the trend is toward better range. (Note: 1986a are the figures from the BLM (Public Land Statistics, 1987), 1986b figures are from the General Accounting Office.)

Percent of Rangeland by Condition Class

Year	Excellent	Good	Fair	Poor	Unclassified
1936	1.5%	14.3%	47.9%	36.3%	
1966	2.2%	16.7%	51.6%	29.5%	
1975	2.0%	15.0%	50.0%	33.0%	
1984	5.0%	31.0%	42.0%	18.0%	4.0%
1985	4.0%	31.0%	42.0%	17.0%	6.0%
1986a	4.0%	30.0%	41.0%	18.0%	7.0%
1986b	4.0%	30.0%	41.0%	18.0%	7.0%
1987	3.0%	30.0%	39.0%	19.0%	9.0%
1988	4.0%	30.0%	38.0%	17.0%	11.0%
1989	3.0%	30.0%	36.0%	16.0%	14.0%
1990	5.0%	32.0%	36.0%	14.0%	14.0%
1991	5.0%	31.0%	36.0%	15.0%	13.0%
1992	5.0%	34.0%	38.0%	13.0%	11.0%
1993	4.0%	33.0%	38.0%	14.0%	11.0%

Figure I. Even though range condition assessments have used different methods, the trend is toward improving rangeland condition (Note: 1986a are the figures from the BLM (Public Land Statistics, 1987), 1986b figures are from the General Accounting Office).

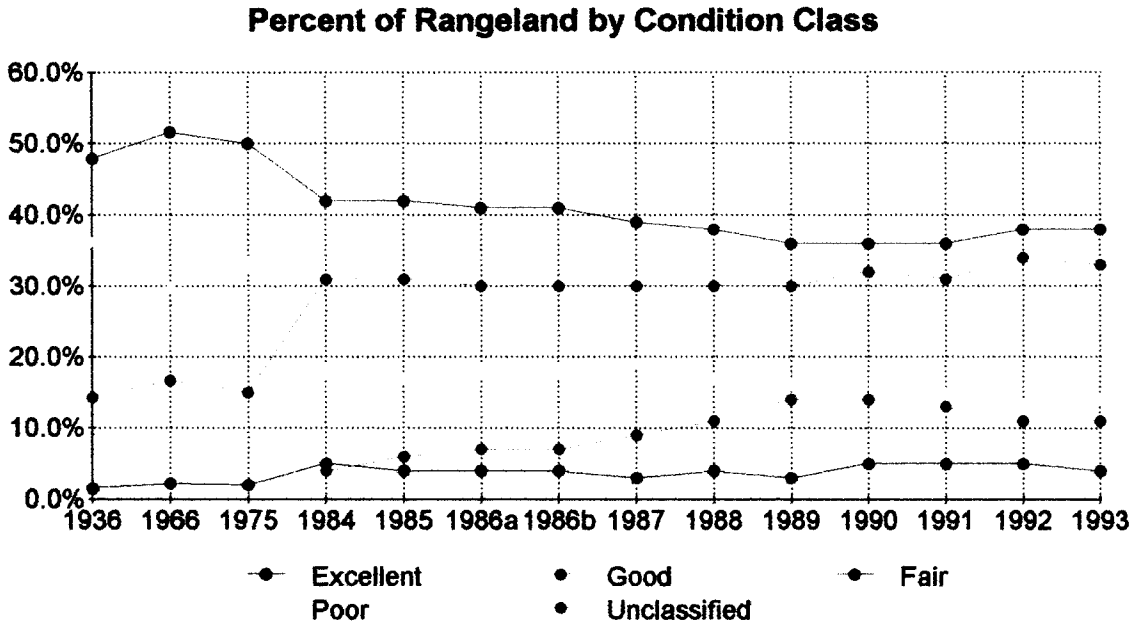

Table II. In 1990, the Bureau of Land Management used big game populations as proof that range trend was improving. This table also includes the 1948 and 1993 figures. The 1948 figures are from the Report to the Director of the Bureau of Land Management 1948 Statistical Appendix. The remaining figures are from the Public Land Statistics (1960, Volume 145, 1988, Volume 173, 1993, Volume 178).

Big Game Populations (excluding Alaska)

	1948	1960	1988	1993	% Increase 1948 to 1993
Antelope	102,365	139,309	295,690	365,792	275%
Bighorn	3,176	4,588	19,956	20,262	538%
Deer	537,327	1,113,097	1,449,308	1,539,508	187%
Elk	15,797	18,278	142,870	248,662	1474%
Moose	410	736	3,505	4,760	1061%

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